

JAN

CRYSTAL CATALOG

NO. 33 — 1990

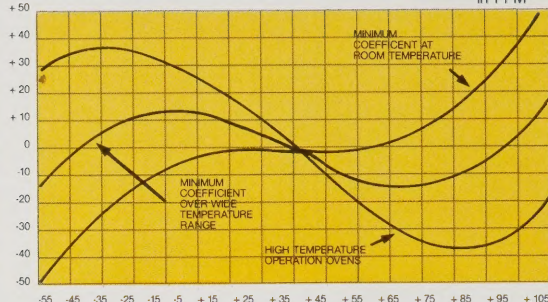


YOUR RELIABLE SOURCE FOR A WORLD OF CRYSTAL-CLEAR COMMUNICATION

FOR FREQUENCY CONTROL

TYPICAL GENERALIZED CURVES

Freq. Deviation
in PPM



GENERAL DATA: The crystal units are made from the "AT" element and have a thickness-shear mode of vibration. Standard U.S. military specifications are used as a guideline in manufacturing our commercial-grade crystals.

Commercial-grade crystals have a typical frequency-temperature curve of $\pm .005\%$ from -40°C to $+90^{\circ}\text{C}$; $\pm .003\%$ from -20°C to $+60^{\circ}\text{C}$.

TYPICAL ELECTRICAL EQUIVALENT PARAMETERS:

The overtone AT element vibrates in the thickness-shear mode on its low-order, odd-integral harmonic frequencies, or overtones. Overtone operation allows considerable raising of the upper frequency limit in this crystal cut. Most overtone AT elements operate on third or fifth overtones:

APPROXIMATE EQUIVALENT SERIES RESISTANCE

FREQUENCY E.S.R.	
MHz	ohms
1.000	540
1.500	410
2.000	290
3.000	150
4.000	75
5.000	60
7.000	35
10.000	24
20.000	20

Maximum Shunt
Capacity: 7 picofarad

APPROXIMATE EQUIVALENT SERIES RESISTANCE FOR OVERTONES.

FREQUENCY (MHZ)	E.S.R. (ohms)
18.0-60.0	40
52.0-110.0 (fifth)	60

Maximum shunt capacity: 7 picofarad

DRIVE LEVEL: It is important to remember that for optimum performance, the lowest possible drive level should always be employed.

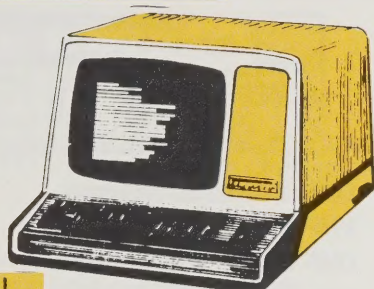
JAN engineers can assist you in determining your needs, and design crystals to suit them.

	FREQUENCY (MHZ)	HOLDER	MAX. DRIVE (WATT)	CALIBRATION TOLERANCE			OVEN $\pm .002\%$ 55/75/85 C
FUNDAMENTAL MODE CRYSTALS HC6/U, HC17/U, HC33/U	1.001-1.999	HC6/U	2M	9.00	10.00	11.00	\$14.00
	2.0-19.9	HC6/U	2M	8.00	9.00	10.00	\$13.00
	20.0-23.9	HC6/U	2M	10.50	11.50	12.50	\$15.50
	24.0-30.0	HC6/U	2M	13.50	14.50	15.50	\$18.00
FUNDAMENTAL MODE CRYSTALS HC25/U, HC18/U MINIATURE HOLDERS	2.0-2.9	HC18/U	2M	9.00	10.00	11.00	\$14.00
	3.0-19.9	HC18/U	2M	8.00	9.00	10.00	\$13.00
	20.0-23.9	HC18/U	2M	10.50	11.50	12.50	\$15.50
	24.0-30.0	HC18/U	2M	13.50	14.50	15.50	\$18.00
THIRD MODE CRYSTALS ANY HOLDER	18-20.9	Any	1-2M	9.00	10.00	11.00	\$14.00
	21.0-59.9	Any	1-2M	8.00	9.00	10.00	\$13.00
	60.0-75.0	Any	1-2M	11.50	12.50	13.50	\$16.50
FIFTH MODE CRYSTALS ANY HOLDER	52.0-89.9	Any	1-2M	9.00	10.00	11.00	\$13.00
	90.0-125.0	Any	1-2M	12.50	13.50	14.50	\$17.50
SEVENTH MODE CRYSTALS ANY HOLDER	110.5-150.0	Any	1-2M	17.00	18.00	19.00	\$22.00

PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

FOR MICRO PROCESSORS

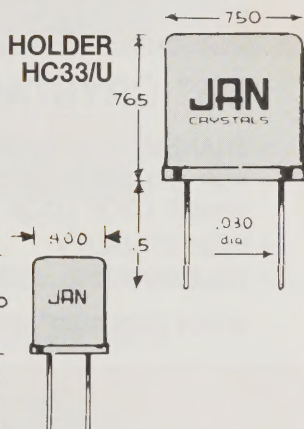
- LOW E.S.R.
- CLOSE TOLERANCE
- LONG-TERM STABILITY
- FREQUENCY DEVIATION
0 TO 70°C MAX. + .01%
- TOLERANCE AT 25° + .005%



HC33/U FREQUENCY (MHz)	HC33/U FREQUENCY (MHz)
1.018000	3.330000
1.025000	3.579545
1.048000	3.600000
1.843200	3.932160
2.000000	4.000000
2.012000	4.194304
2.097152	4.434000
2.457600	4.440000
2.500000	4.550000
2.667000	4.750000
3.000000	4.915200
3.200000	4.956200
3.276800	5.000000

HC18/U FREQUENCY (MHz)	HC18/U FREQUENCY (MHz)
3.276800	5.714300
3.330000	5.850000
3.579325	6.000000
3.579545	6.144000
3.600000	6.400000
3.932160	6.553600
4.000000	8.000000
4.194304	10.000000
4.915200	12.000000
5.000000	13.516800
5.068800	15.000000
5.185000	18.432000
5.585000	19.660800
	20.000000

WHEN ORDERING
PLEASE SPECIFY
MP-Crystal



CALL FOR PRICES ON SPECIFIC CRYSTALS.
QUANTITY PRICES AVAILABLE UPON REQUEST

NOTE: This table lists only the most popular frequencies. Others are available on request. Please contact us with your specific needs. New frequencies are being added as required.

HC18/U



HOLD-DOWN WIRE
.25 EXTRA

FOR RADIO CONTROL

SURFACE AND AIRCRAFT
RC CHANNELS 00-90

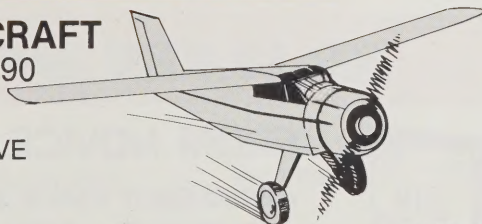
MOST MODELS
TRANSMIT OR RECEIVE

\$9.00 EACH

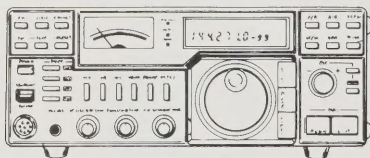
TOLERANCE
± .001% or 10 PPM

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

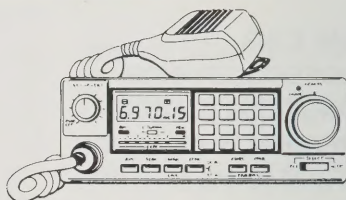
ORDER
TOLL-FREE
1-800-JAN-XTAL
1-800-526-9825



FOR COMMERCIAL TRANSCEIVERS



LOW BAND: 30-52 MHz
VHF BAND: 134-174 MHz
UHF BAND: 450-474 MHz
AIR CRAFT: 118-138 MHz
 ± 10 PPM



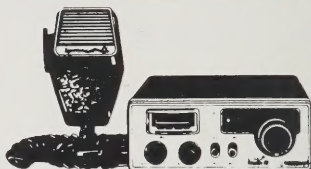
\$9.00 EACH

Temperature Control (see page 2)

FOR CITIZEN BAND TRANSCEIVERS

"CB" CRYSTALS

- TRANSMIT OR RECEIVE
- FOR SYNTHESIZER AND PHASE LOOP LOCK
- HIGH STABILITY
- TOLERANCE ± 25 PPM



\$7.00 EACH

WHEN ORDERING: Specify mfg. name, model, holder type (HC18/U, HC25/U)

FREQUENCY "STANDARDS"

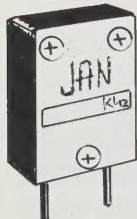
- SHIPPED FROM STOCK
- 1 MHz, TOLERANCE ± 50 PPM HC6/U
- 100 KHz, TOLERANCE ± 100 PPM HC13/U
- STANDARD LOAD CAP — 32 pF

\$9.50 EACH

\$15.00 EACH

WIRE LEADS AVAILABLE

FOR AMATEUR BAND CRYSTALS



FROM NOVICE...TO GENERAL

- FREQUENCY RANGE 3000-8900 KHz
- TOLERANCE $\pm .005\%$ at 25°C
- FT-243 HOLDER $\pm .005\%$,
32 pF LOAD CAPACITY

\$8.00 EACH

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

STC Components
2277 South Grand Avenue
Santa Ana, CA 92705
(714) 556-1228

Bulk Rate
U.S. Postage
PAID
Permit No: 269
Cerritos, Calif

TO:

Simsbury, CT 06070

DISTRIBUTOR FOR CRYSTALS AND MAGNETICS PRODUCTS

Switched Mode Power Supplies • Wall Mount Adapters • Delay Lines • DC-DC Converters • Pulse Transformers
Power Transformers • EMI/RFI Filters • Crystals & Oscillators • Analog & Digital Panel Meters

CRYSTALS & OSCILLATORS

TTL OSCILLATORS

Quantity Pricing (Per Unit Price, FOB Santa Ana)

<u>Frequency</u>	<u>25</u>	<u>50</u>	<u>100</u>	<u>250</u>	<u>500</u>	<u>1000</u>
1.8432 MHz	2.50	2.25	2.00	1.85	1.80	1.77
4.0, 8.0, 9.6, 10.0, 12.0, 14.31818, 16.0, 16.257, 20.0 MHz	2.25	2.00	1.90	1.80	1.70	1.65
24.0, 25.0, 25.175, 28.332, 28.63636, 30.0, 32.0, 40.0, 48.0 MHz	2.25	2.00	1.91	1.81	1.71	1.66
50 MHz	3.00	2.50	2.25	2.10	2.05	1.96
66, 66.666 MHz	3.00	2.75	2.50	2.30	2.25	2.16

All Frequencies In Stock

Harmony Electronics Crystals

Quantity Pricing (Per Unit Price, FOB Santa Ana)

<u>Frequency/Package</u>	<u>.50</u>	<u>100</u>	<u>250</u>	<u>500</u>	<u>1000</u>	<u>2500</u>	<u>5000</u>
32.768 KHz/DT-38	.50	.40	.35	.30	.25	.22	.20
1.8432 MHz/HC-49/U	2.25	2.00	1.80	1.50	1.35	1.27	1.25
2.0000 MHz/HC-49/U	1.80	1.60	1.40	1.20	1.10	1.07	1.05
2.4576 MHz/HC-49/U	1.40	1.20	1.00	.90	.80	.78	.76
3.579545, 4.0, 4.9152, 5.12, 6.0, 6.144, 8.0, 9.6, 10.24, 12.0, 12.288, 14.31818, 16.0, 18.432 MHz/HC-49/U	.75	.50	.44	.42	.41	.39	.38
19.6608, 20.0 MHz/HC-49/U	1.25	1.00	.80	.70	.65	.63	.61
24.0, 25.0 MHz/HC-49/U	1.50	1.25	1.05	.95	.82	.80	.79
30.0 MHz 3rd OT							
40.0 MHz 3rd OT/HC-49/U	.80	.65	.55	.52	.50	.49	.48

Other Crystal & Oscillator Manufacturers

(Available through our affiliation with Dove Electronics)

Daiwa
ECS
Ecliptek
Epson
Fox

M-Tron
Monitor
NEL
Oscillatek
Pletronics

RXD
Saronix
Statek
Valpey Fisher

Commercial, Military, TTL, CMOS, HCMOS, ECL

Other Products Available

DC-DC Converters
Delay Lines
EMI/RFI Filters
Digital & Analog Panel Meters

Switched Mode Power Supplies
Pulse Transformers
Power Transformers
Wall Mount Adapters

STC Components
2277 South Grand Ave.
Santa Ana, CA 92705
Tel: (714) 556-1228
Fax: (714) 556-2350

FOR TWO METER TRANSCEIVERS



Converted Commercial Transceivers Not Included

VHF BAND

- INCLUDES CAP AND MARS
- TRANSMIT OR RECEIVE
- 143.00-149.00 MHz
- TOLERANCE ± 25 PPM

\$5.50 EACH

FOR $\pm .001\%$, ADD \$1.00 EACH
ALL TWO METER CRYSTALS IN
HC25/U HOLDERS ONLY

We maintain technical information on most popular amateur two-meter FM transceivers. When ordering, please specify crystal type, frequency, make of equipment, model number, and whether transmit or receive.

UHF BAND

\$8.50 EACH

- 220-240 MHz
- TOLERANCE ± 10 PPM
- MIDLAND, REGENCY, WILSON
VHF ENGINEERING, B&K COBRA, ETC.

FOR MARINE TRANSCEIVERS

VHF MARINE CHANNELS ONLY

ALWAYS SPECIFY MANUFACTURER, MAKE, MODEL, OPERATING
FREQUENCY OR CHANNEL

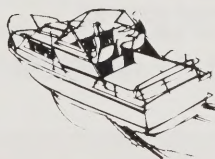
± 10 PPM

\$9.00 EACH

FOR SSB TRANSCEIVERS

± 10 PPM

\$12.50 EACH



FOR SCANNER CRYSTALS

LOW BAND: 30-49 MHz

VHF BAND: 134-174 MHz

UHF BAND: 450-470 MHz

AIRCRAFT FREQUENCIES: 118-138 MHz

TYPE OF HOLDERS: HC6/U, HC18/U, HC25/U

\$7.00 EACH
 ± 10 PPM

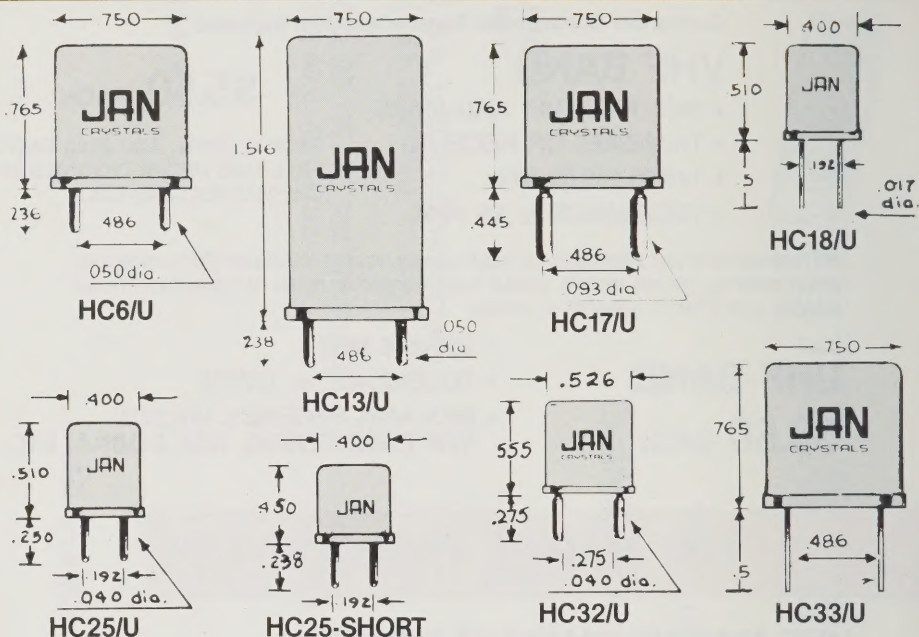
COMMERCIAL MONITORS AND PAGERS —

REPCO, PLECTRON, MOTOROLA, GE, ETC.

\$9.00 EACH

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

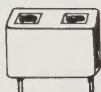
CRYSTAL HOLDERS:



WIRE LEADS AVAILABLE

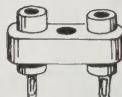
CRYSTAL SOCKETS

ORDER BY NUMBER



CE-25
75¢

NY REG:
Low loss
socket, P.C.
mounting
for HC25/U
type
crystal



CE-1
75¢

NY REG:
Low loss
socket for
HC6/U
holder. 1/2"
pin spacing
.05" holes

EXPEDITED ORDERS SERVICE

FOR ADDITIONAL COST PER CRYSTAL

- **REDBALL** — Crystals will be shipped next working day. Add \$10.00 per Crystal
- **E.O.D.** — Crystals will be shipped within 3 of our working days. Add \$5.00 per Crystal.
- **RUSH** — Crystals will be shipped within 8 of our working days. Add \$2.00 per Crystal.
- Expedited orders should not exceed 10 Crystals per order.
- When ordering by phone, please stipulate service desired.

WE WELCOME YOUR MASTERCHARGE OR VISA

PLEASE GIVE EXACT NUMBERS
AND EXPIRATION DATE.

(MINIMUM \$10 ORDER FOR CHARGES)



JAN CRYSTALS operates on a four-day
work week (Monday-Thursday), resulting in
greater efficiency and reduced cost. Our
aim is constant improvement at minimum
cost for our customers.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

ORDERING INFORMATION

To avoid discrepancies, we prefer that you supply us with as much pertinent data as possible...so that we can assure our customers of correct crystal calculation and correlation.

HOW TO ORDER:

• FOR NON-STANDARD CRYSTALS:

1. Manufacturer name, model number, trans./receive chassis number.
2. Operating frequency.
3. Crystal frequency and/or formula.
4. Holder type: HC6/U, HC18/U, HC25/U, HC33/U, HC17/U.
5. Resonance series or parallel.
6. Load capacitance at parallel resonance (in pF).
7. Mode of operation (i.e., fund, third, fifth, seventh).
8. Oven or non-oven, and temperature in C°.
9. Frequency tolerance: deviation (plus or minus) from desired operating frequency at a specific temperature. (Example: $\pm .001\%$ at 25°C.)

For VHF and UHF applications, a frequency tolerance of $\pm .001\%$ or 10 PPM is recommended. Whenever possible, send sample crystals known to be on frequency. These will be returned with your order.

• FOR STANDARD MILITARY CRYSTALS:

Indicate CR type number per Mil-C-3098 and specify the desired frequency.

SPECIFY THE FOLLOWING:

- Crystal frequency
- Holder type
- Tolerance (in percentages)
- Series/parallel resonance
- Crystal load capacity (CL)*
- Oven or non-oven

*STANDARD CL ARE 20pF, 30pF, 32pF, 50pF.

TERMS:

Pre-Paid (Check or money order)

C.O.D. (Only on orders shipped U.P.S.)

\$10.00

Credit Card (Visa or MasterCard)

Min. Order

Established JAN Accounts (Net 30 Days)

SHIPPING:

First class mail & packaging Add **40¢** per crystal

Express Mail (overnight) Add **\$10.75** per order

On orders outside U.S. (via air mail) Add **\$1.35** per crystal

U.P.S. SERVICE: Common carrier Add **\$2.75** per order*

Blue Label Air (where available) Add **\$4.00** per order*

Red Label Air (where available) Add **\$12.00** per order*

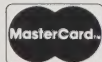
*Add \$2.75 per order for C.O.D. Service *MINIMUM CHARGE, SUBJECT TO CHANGE.

CLAIMS: Claims for defective workmanship or damaged crystals must be made in writing with 30 days after receiving the shipment. Discrepancy in count must be reported within 10 days after shipment, or the count is considered correct.

RETURNED MATERIAL: Crystals returned for replacement must be accompanied by a complete explanation of the defect. Crystals returned because of customer error will be accepted for \$1.00 per crystal credit against new order.

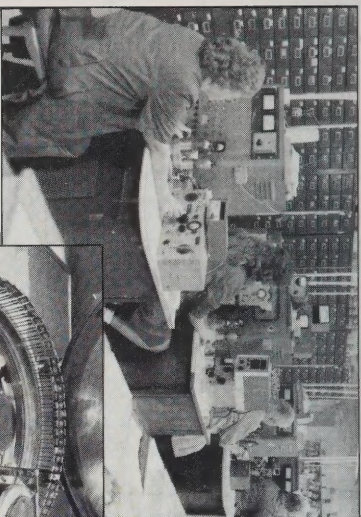
TOLL-FREE: 1-800-JAN-XTAL

FAX ORDERS: 1-813-936-3750
PLANT (813) 936-2397

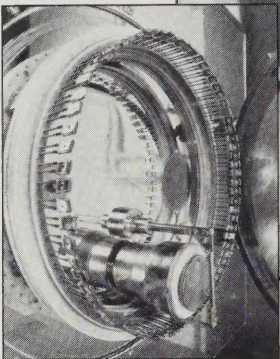


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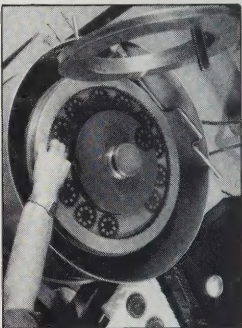
JAN CRYSTALS...MANUFACTURING:



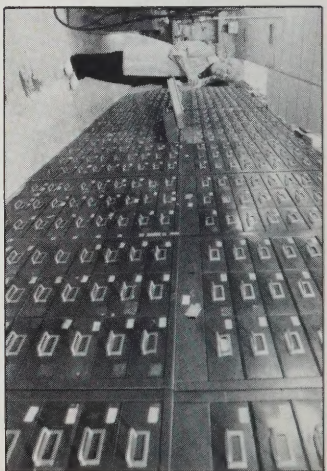
ABOVE: Individualized calibration done to customer's specifications.



LEFT: Automatic calibration to final frequency tolerance.



LEFT: Automatic radio-controlled lapping.
RIGHT: Millions of semi-finished components on hand, ready to fill your needs quickly.



CALL TOLL-FREE
1-800-JAN-XTAL
(526-9825)
FAX ORDERS: 1-813-936-3750
PLANT: (813) 936-2397 MONDAY-THURSDAY

JAN CRYSTALS

2341 CRYSTAL DRIVE
P.O. BOX 06017
FORT MYERS, FL 33906-6017

ADDRESS CORRECTION REQUESTED
PRINTED MATTER

0032565

BULK RATE
U.S. POSTAGE
PAID
FORT MYERS, FL
PERMIT NO. 251